4-4-2014

3D Technologies at Brockport. What's Next?

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3D Technologies at Brockport: What's Next?

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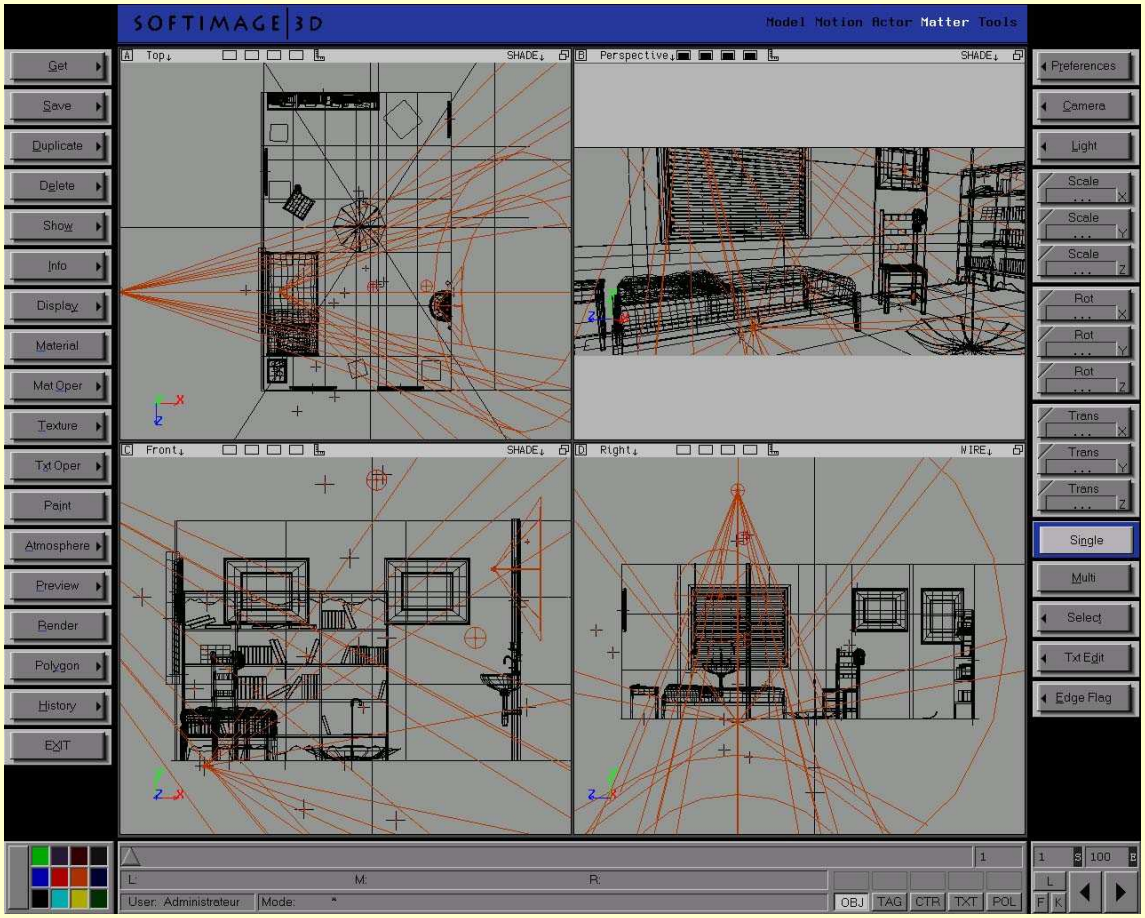
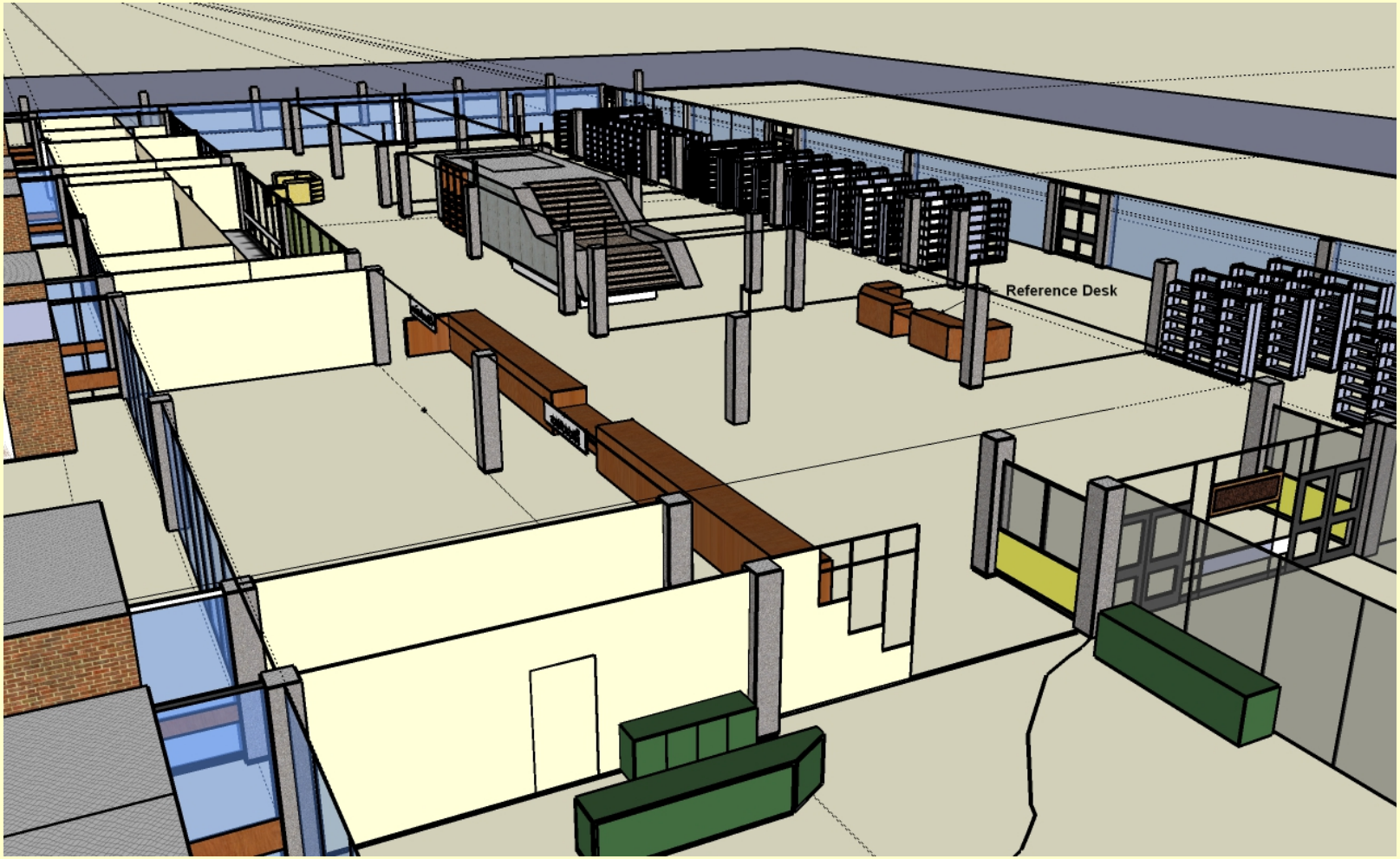
Uninformed Amateur's
Quick and Dirty
Overview of

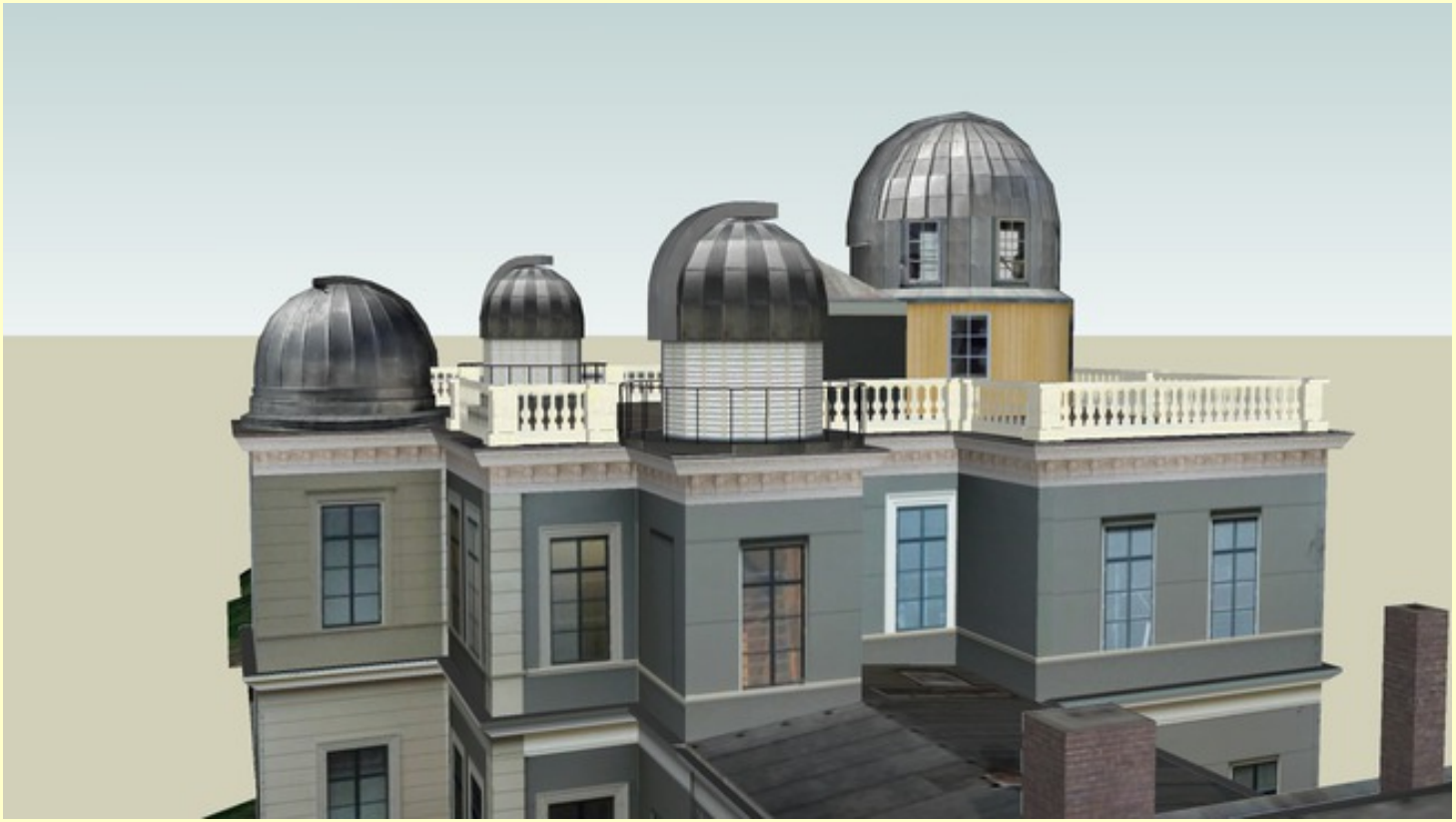
3D Technologies



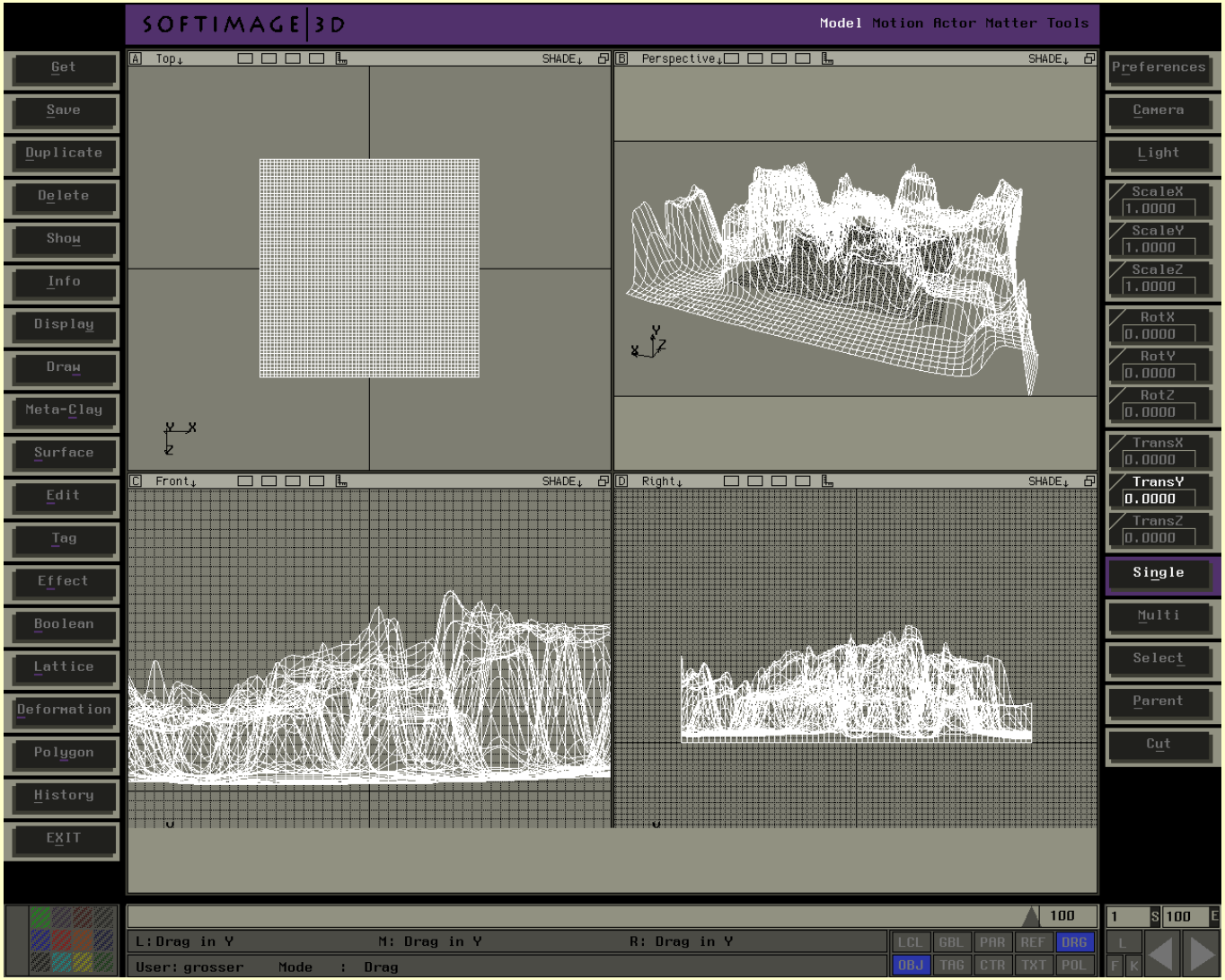
Computer-Assisted Design (CAD)



Sketchup study of Drake Main Floor

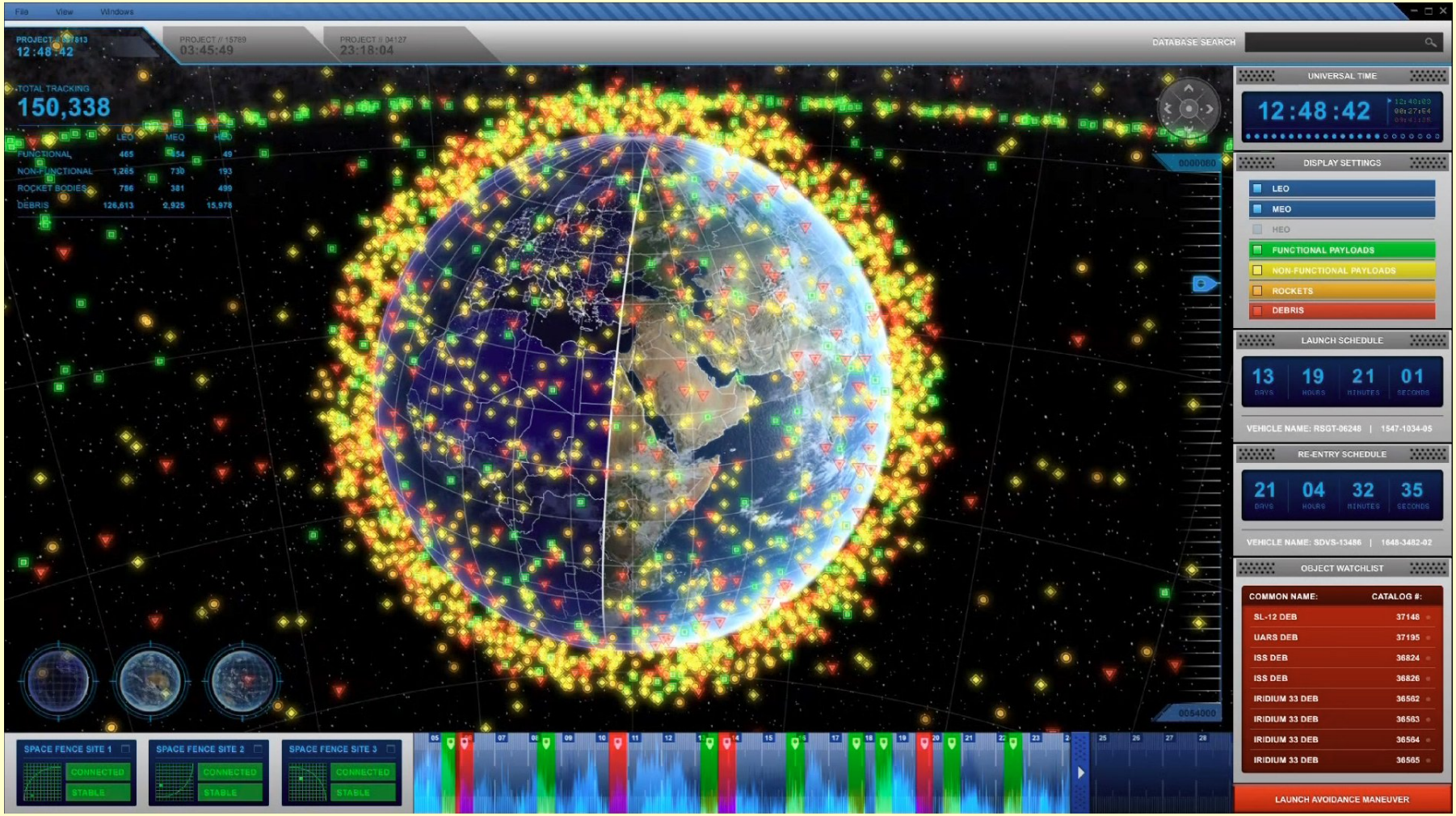


Leiden Observatory (in Sketchup 3D Warehouse)

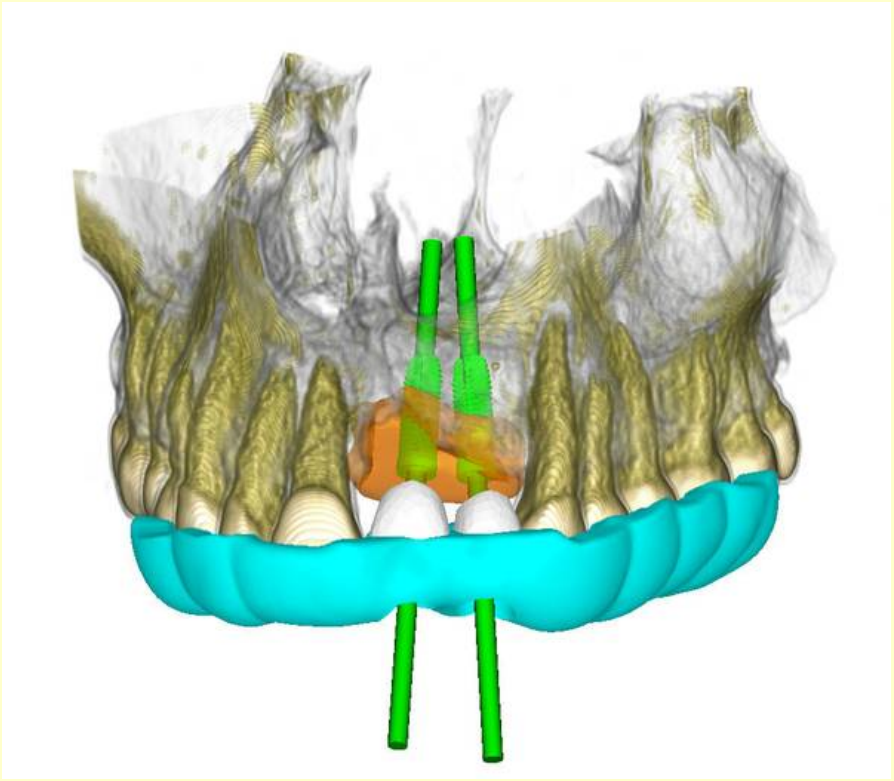


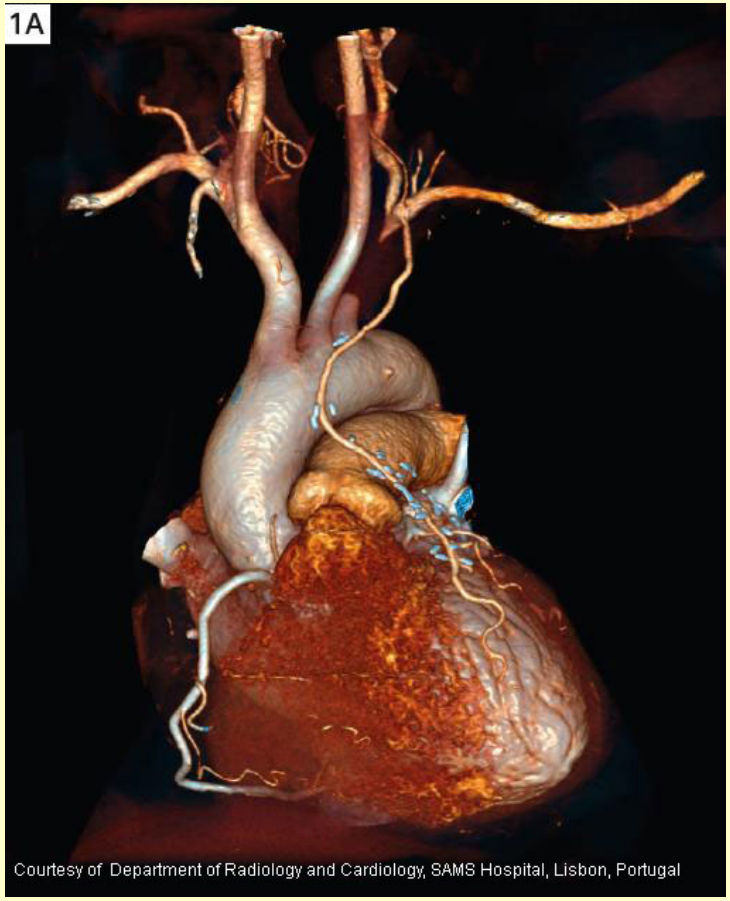
3D contour mapping

Lockheed-Martin flight simulator

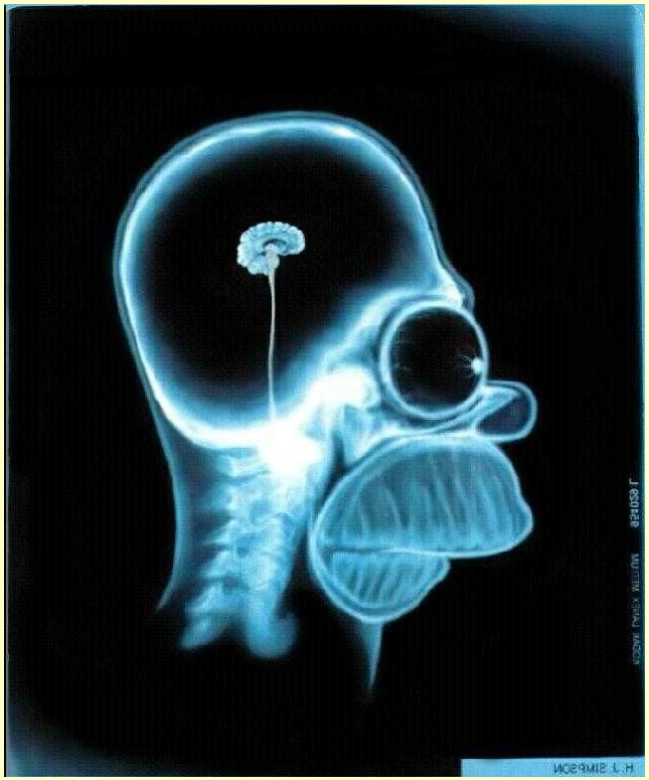


Space Junk Tracker



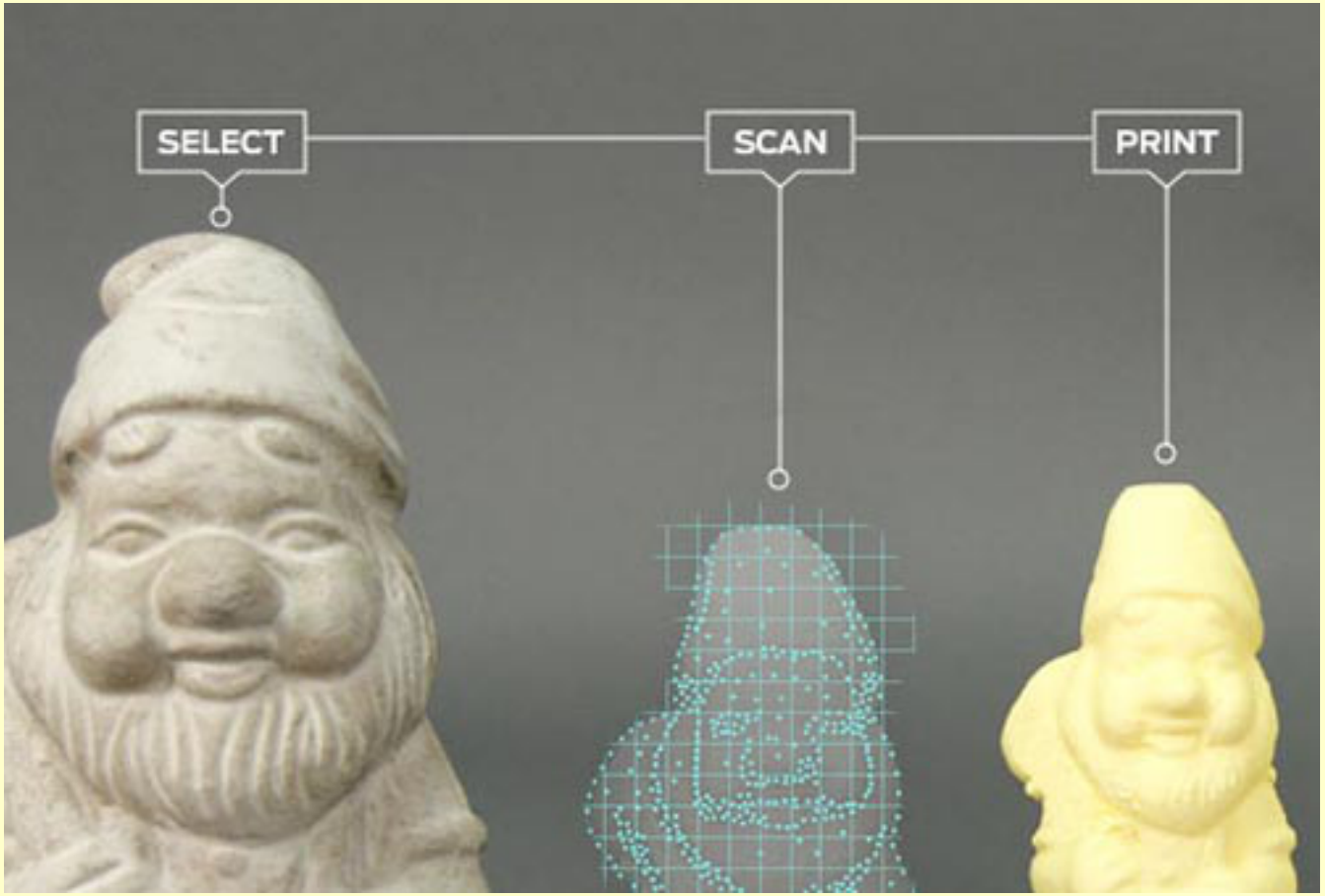


Medical Imaging

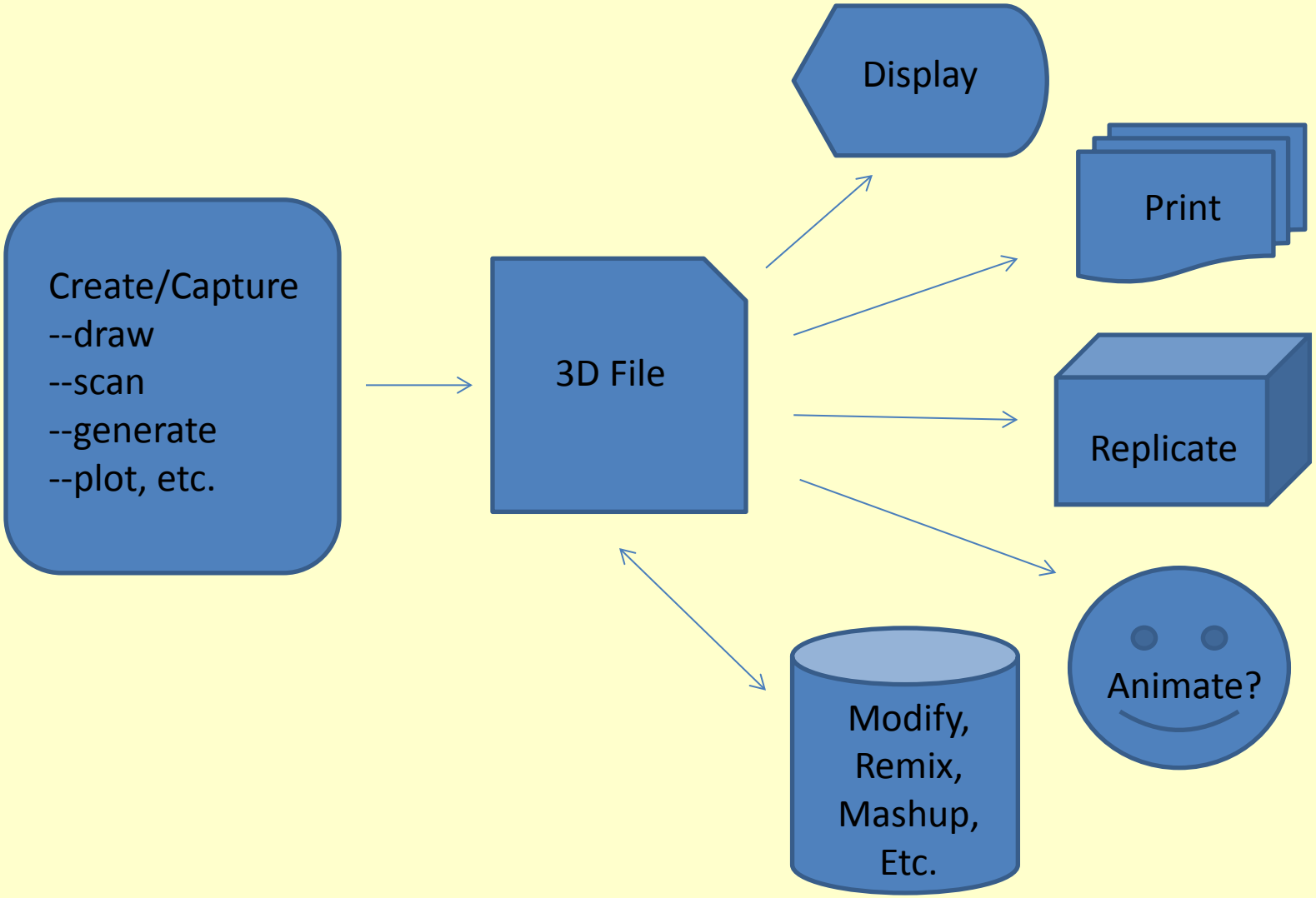


Scanning

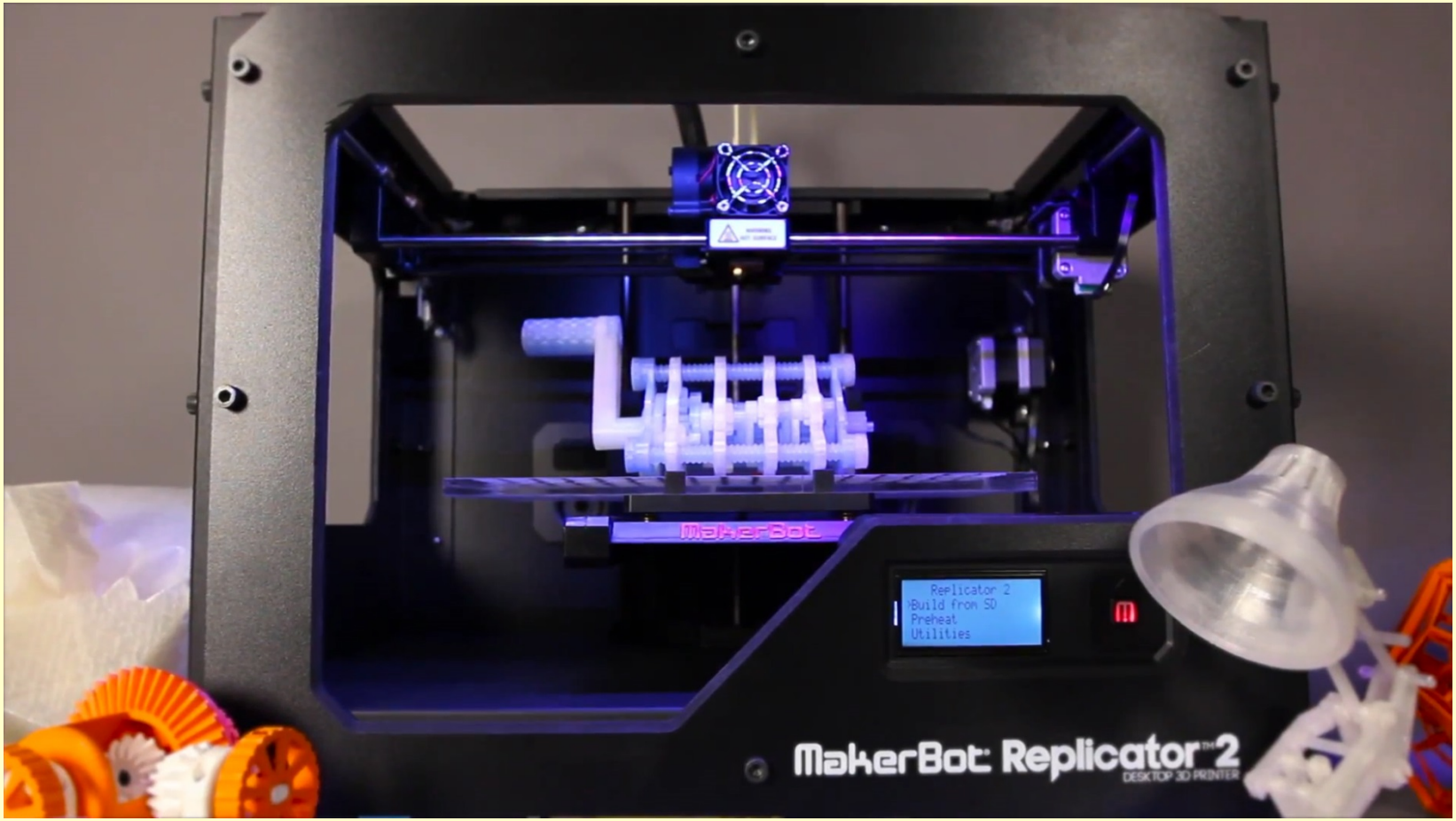
NextEngine tabletop laser scanner



One Possible Scenario:
Replicating a solid object



Crude, oversimplified, non-technical schematic of process



Makerbot Replicator2 3D Printer

3D Printing @
The College at Brockport

Timeline

Summer 2013 -

- Makerbot 3D Printer (IT) and NextGen 3D Scanner (Tech Grant) arrive. Learning begins. Road shows.

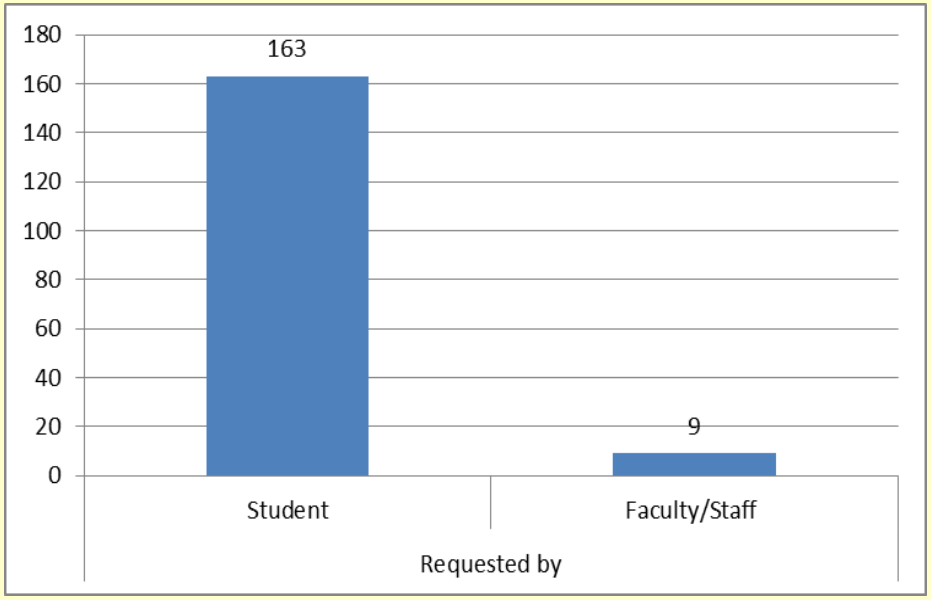
Fall 2013-

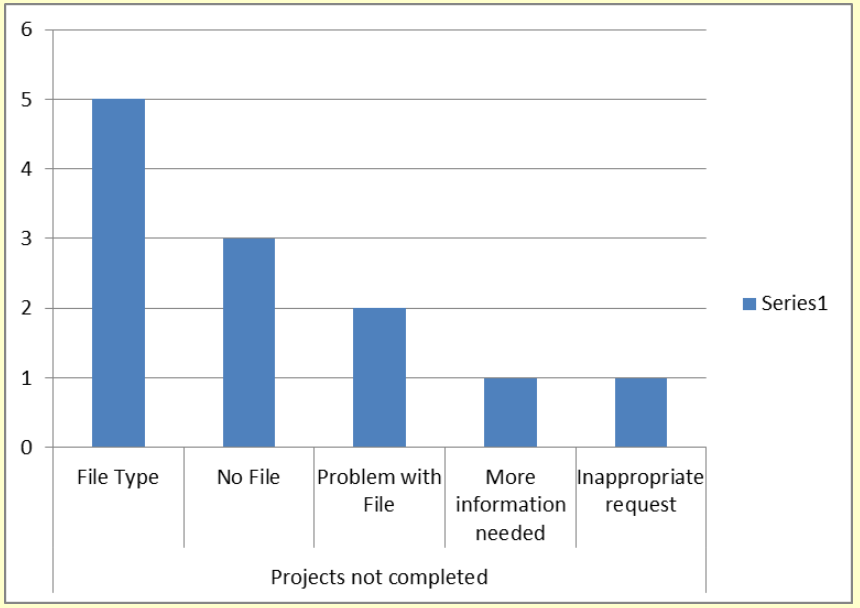
- Student assistant hired, Tech Tools Guide, Free printing.

Spring 2014 -

- Fewer requests due to fees, moving towards curricular use.

Our first semester's stats





Cornell Creative Machines Lab

3D Printing

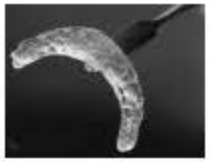
3D Printers

Fabbers: Multi-material 3D printing for automated fabrication of integrated, functional parts

Rapid Assembly of Phyical Voxels (Digital Materials): 3D printing physical bits—each with specific materials and function—to enable a physical digital revolution

Fab @ Home: Democratizing 3D printing at the home

Applications



Tissue Engineering: A technology for directly fabricating 3D living tissue

SUNY New Paltz

The nation's first MakerBot Innovation Center.

Opened February 12th 2014

The College at Brockport

Still in the development stage.

Our goal: supporting academic achievement with 3D modeling and printing

3D Models as Teaching Tools

- Complex concepts into physical/visual forms: atoms, crystals
- Scan an item, enlarge and print for studying: a zoology class @ SUNY Oswego recent printed a snake skull
- Recreate an item to delicate for hands on learning: Cornell University's recreation of ancient Middle East tablets

Student Individual Achievements

Varies greatly from imaginative feats of engineering to creative improvement of everyday items

- Virtual Organic Glasses created by college students in South Korea
- Easy Open Bottle Cap created by a Pittsford Mendon High School student

Classroom Use

- Graphic design class “hack” classic board games
- Human Factors class will be designing ergonomic utensils
- Finance class studied MakerBot from an investment stand point

Department Recognition

- Set & Prop designers for *Young Frankenstein* are currently replicating part of the set & using the experience to write an article

- Student contest can earn recognition for the student, department and school

http://www.stratasys.com/industries/education/students

How best to serve our campus ?

Applications

- Provide teaching tools in the form of 3D models
- Students – encourages independent studies
- Faculty – design and support classrooms projects
- Departments – support and encouragement can lead to recognition

Training

- Individual vs. Classroom
- Time Investment
- Learning Curve

Faculty Learning Community

Goals:

1. Developing familiarity with the use of 3D design applications, scanning and printing technologies.
2. Exploring/discovering applications of these technologies in instructional, research and artistic activities.
3. Creating objects, digital or physical, for the purposes of utility, fun, art and scholarship.
4. Using these experiences to reflect on learning, creativity and problem-solving processes and how we teach, guide, and mentor others.

Expansion

Applied for Faculty Technology Grant for additional printers

Develop a Makerspace – an area for designing and producing physical objects

End Goal

Supporting academic achievement with 3D modeling and printing